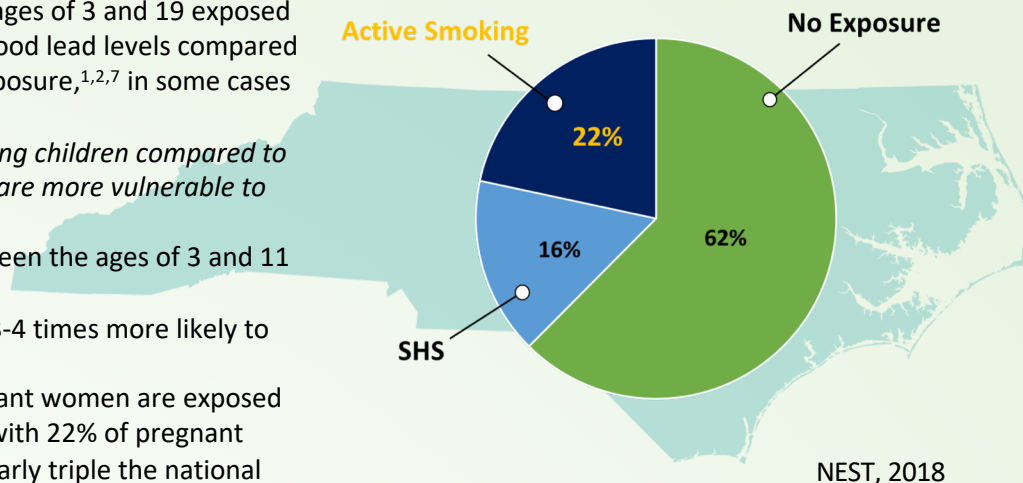


ISSUE BRIEF: SMOKING & LEAD EXPOSURE IN NC CHILDREN

Background

- Cigarettes contain lead that is volatilized when smoked and can readily enter the lungs of nonsmokers when they inhale secondhand smoke (SHS).¹⁻⁵
- Children and adolescents between the ages of 3 and 19 exposed to SHS were found to have increased blood lead levels compared to those with no secondhand smoke exposure,^{1,2,7} in some cases up to 38% higher.¹
- *This effect was more pronounced in young children compared to adolescents, suggesting young children are more vulnerable to lead exposure from SHS.*¹
- An estimated 54% of U.S. children between the ages of 3 and 11 are exposed to SHS.⁸
- Children living in multi-unit homes are 3-4 times more likely to encounter SHS than adults.⁹
- In Central North Carolina, 38% of pregnant women are exposed to either direct or secondhand smoke, with 22% of pregnant mothers themselves smoking. This is nearly triple the national average of mothers who smoke.¹⁷
- Even at low levels, lead exposure during pregnancy and early childhood (0-6 years) has been associated with a host of neurodevelopmental disorders later in life, including behavioral disorders (ADHD, aggression) and learning impairments (lowered IQ scores) that can be irreversible.^{10,11}
- While the removal of lead-based paints following the Congressional ban in 1978 greatly decreased blood lead levels (BLLs) in children, the percentage of NC one- and two-year old's with BLLs ≥ 5 ug/dL is still relatively high in some regions of the state (Appendix 1),¹² suggesting that other routes of lead exposure are impacting NC children.¹³

Smoking During Pregnancy in NC



Why Should We Prioritize Smoking Legislation & Research?

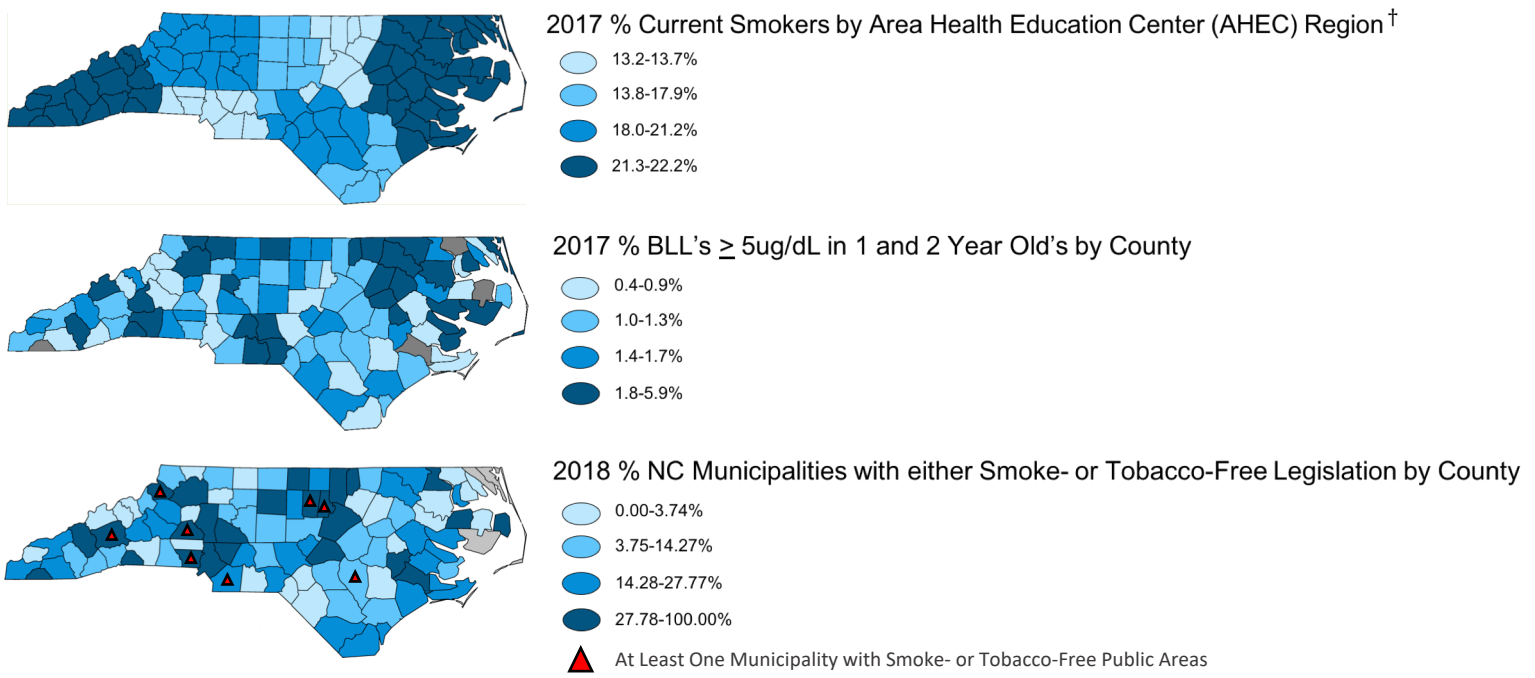
- ***Cigarettes and their smoke contribute to increased blood lead levels in children and thus should be explored as an additional route of childhood lead exposure.***
- Governor Roy Cooper's Early Childhood Action Plan recently categorized household tobacco cessation and monitoring of children's blood lead levels as top priorities in improving children's health.¹⁶
- The Environmental Protection Agency established a maximum contaminant level goal of 0 ppb¹⁴ for lead in drinking water due to the known developmental impacts low lead exposure levels can have.
- Because developmental smoke exposure and lead exposure disproportionately affect lower-income households,¹⁵ increased monitoring efforts are critical to protect lower income communities and their children.
- As SHS exposure occurs both in public areas and in households, policies and legislation targeting residential *and* public smoking should be supported, especially in spaces with young children or pregnant women. This is of particular importance because:
 - Areas of increased adult smoking incidence closely align with those of elevated children's BLLs (Appendix 1).
 - NC counties with legislation banning smoking in public areas are associated with lower children's BLLs (Appendix 2).
 - Only 2.2% of NC municipalities currently ban smoking in public areas.
 - Nearly 230 local U.S. public housing authorities across 27 states have adopted smoke-free policies for their residential properties as of January 2011.⁶ North Carolina is not one of these states.
- A few efforts are currently in place to reduce residential smoking and should be supported. For example, North Carolina Medicaid currently covers 7 forms of smoking cessation treatment.¹⁵

Recommendations

1. **Determine extent to which cigarette-smoke exposure is contributing to elevated blood lead levels in NC children.**
2. **Cross-examine household lead paint and lead in drinking water as compounding factors.**
3. **Explore and prioritize legislation that supports the banning of smoking around children of vulnerable developmental ages (i.e., during gestation and from 0-6 years old).**

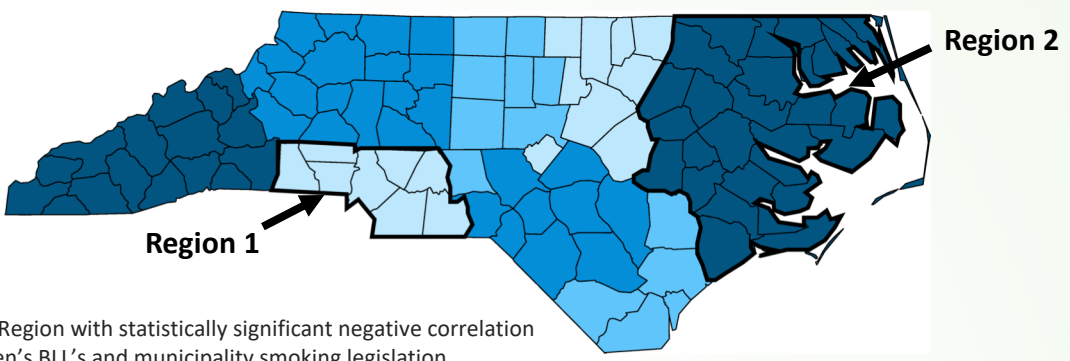
ISSUE BRIEF: SMOKING & LEAD EXPOSURE IN NC CHILDREN

Appendix 1- NC Smoking Prevalence, Children's Elevated BLL's, and Municipalities with Smoke- and Tobacco-Free Legislation, by Region or County^{5,12,18}



[†]Source: NC DHHS 2017 Behavioral Risk Factor Surveillance System

Appendix 2- NC Regions with Strong Correlation Between Children's BLL's and Municipality Smoke- or Tobacco-Free Legislations^{5,18}



Smoking Legislation and Children's BLL's Across All NC Counties are **Highly Correlated**

Regions 1 and 2 are most highly correlated



These correlations are negative, indicating that fewer municipality smoking legislations are associated with elevated children's BLLs.

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